

# 3D Documents – from Affordable Creation and Indexing to Effective Usage

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## ABSTRACT

*Regardless how the Future Internet will present itself to the user community there is no doubt that it will contain 3D objects as highly relevant information entities which users will interact with as naturally as they do with textual objects today. As a consequence, the use of these multimedia information entities - which I prefer to call '3D Documents' - will demand answers and solutions to the open issues of efficient creation, markup, indexing, retrieval, dissemination, and long-term preservation for IT systems, seen from the technical side, and for (Digital) Libraries, Archives and Museums, seen from the content provider's side.*

*Building 3D models or virtual worlds is typically either done by gifted people modeling with standard CAD tools or with digitization campaigns based on photogrammetric technologies. Unfortunately, both approaches - so far - only produce large amounts of textured triangle meshes which, among many other deficiencies, lack semantic structure in the sense that the visual / geometric representation of objects or building blocks in these virtual worlds is not adequately stored as explicit (high-level) semantic entities but as a sheer mass of low-level planar approximation entities like 3D points or triangles.*

*The talk will motivate a change in the way we represent 3D Documents and argue that we do not have to discard all the tools and workflows we have developed over time but to augment them with a 'semantic dimension' which will not only improve the quality of the final result but also make life significantly easier in all stages of the acquisition pipeline.*

## Biography

Professor Dieter W. Fellner, PhD

Dieter Fellner is a professor of computer science at the Technical University of Darmstadt, Germany, and the Director of the Fraunhofer Institute of Computer Graphics (IGD) at the same location. Previously he has held academic positions at the Graz University of Technology, Austria, the University of Technology in Braunschweig, Germany, the University of Bonn, Germany, the Memorial University of Newfoundland, Canada, and the University of Denver, Colorado. He is still affiliated with the Graz University of Technology where he chairs the Institute of Computer Graphics and Knowledge Visualization he founded in 2005.

Dieter Fellner's research activities over the last years covered algorithms and software architectures to integrate modeling and rendering, efficient rendering and visualization algorithms, generative and reconstructive modeling, virtual and augmented reality, graphical aspects of internet-based multimedia information systems and digital libraries. In the latter field he has initiated/coordinated the first strategic initiative on 'General Documents' (funded by the German Research Foundation DFG, 1997-2005) followed by a DFG-Research Center on 'Non-Textual Documents' (2006-2011). In 2006 he initiated a new funding initiative on 'Visual Computing' funded by the Austrian Ministry BMVIT.

In the areas of computer graphics and digital libraries Dieter Fellner is a member of the editorial boards of leading journals in the respective fields and a member of the program committees of many international conferences and workshops.

He is a member of the EUROGRAPHICS Association where he serves in the Executive Committee and as Chairman of the Publications Board, ACM, IEEE Computer Society, and the Gesellschaft für Informatik (GI) where he serves as a member of the extended Board of Directors and as Chairman of the Graphics Chapter (Fachbereich Graphische Datenverarbeitung). In 2009 he became a member of the Academia Europaea.

Furthermore, Dieter Fellner is an advisor for the German Scientific Council, the German Research Foundation, and the European Commission (as a member of ISTAG, the IST Advisory Group to the European Commission).

# HCI Remixed: Interaction, Sensing and New Devices

Nicolas Villar  
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## ABSTRACT

*The computing mouse has achieved a great deal for a device that's conceptually over four decades old. Indeed its mainly because of this device that we have the Graphical User Interface (GUI), comprising windows, icons, menus, and pointer (WIMP). The mouse and WIMP are an integral part of our daily interactions with computers, but what's next? In this talk, I will give examples of novel computing devices being built at Microsoft Research, which allow users to shift away from the traditional mouse and WIMP-based interactions. Like other researchers, we are interested in enabling more natural interactions with computers, replacing the mouse with our hands, and making the user interface "come to life" in more tangible ways. Future interactions with computers are likely to become more hands-on, more playful, and more aligned with our real-world interactions.*

## Biography

Nicolas Villar is a researcher in the Sensors and Devices Group, based at the Microsoft Research lab in Cambridge, UK. He is particularly interested in the use of embedded systems – programmable microcontrollers, wireless communication devices, sensors and actuators – as building blocks in the design of interactive objects and user interface devices that are engaging, useful and usable. His current work focuses on understanding and developing technologies that enable interactive devices to be rapidly prototyped, manufactured and deployed into use.